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Maneuver
Fire Support
Air Defense
Command & Control
Intelligence
Mobility & Survivability
Combat Service Support
Combined Arms
Size of Ground Forces
Power Projection
Joint/Combined Activities
Training
Leadership
Ability to Assimilate
Combat Experience
Readiness
Morale & Cohesion
OOTW Capabilities
Battlefield Performance Projection

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METHODOLOGY FOR QUANTIFYING FOREIGN GROUND FORCE PERFORMANCE FACTORS

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Introduction

For years the intelligence community has been acknowledged as providing good information on foreign “hard factors,” such as the organization of foreign ground forces—including the number of men and quantity of equipment authorized and the performance and characteristics of the equipment. It has been equally “pinged” for not providing good information on the “soft factors,” such as actual force capability to wage war (in terms of evaluating the ability of troop leaders, tactical and technical training status, and readiness, among other factors). The U.S. Army National Ground Intelligence Center recently began to use a methodology that numerically evaluates many of these “soft factors” at the national level. During this process we define, on a scale of 1 to 10, the level of performance that a specified country is capable of achieving. We recognize the pitfalls of blindly reducing every judgment to numbers and caution users that they must use the output of this process with care. Nevertheless, there is a need to compare one nation’s military force with another, and this comparison must be intelligible to nonspecialists. The remainder of this paper discusses those areas that we evaluate and what needs to be done to make these factors usable in leveraging technology for the military analyst.

This methodology requires country analysts who use it to be knowledgeable of the country and its ground forces. They must also be aware of national objectives, threat perceptions, national interests, and current military doctrine. Analysts must also use common sense and pick the rating level that best describes the level of capability of the country’s ground forces. These ratings judge the overall capability of a country and not the value of specific units. Not all countries will meet every requirement of a specified level, but we believe that the soft factors in a country can be successfully quantified.

Before tackling soft factors, we must define hard factors. They are factors that can be seen and measured. Such things as number of divisions, equipment characteristics, terrain, and weather are hard factors. I realize that some will not believe weather is a hard factor, but it can be measured and described with an appropriate amount of precision. “Soft factors” are the “glue” that holds a military force together and allows it to execute missions. We believe that hard and soft factors must be combined if combat power is to be properly evaluated.

Materiel Integration

Overall, hard factors are generally available for any desired country. Soft factors have normally been placed in the “too hard to do box” by the intelligence community. Soft factors cannot be seen, counted, or heard, but they have had an overwhelming impact on the performance of armies in this century. Recently, during the Gulf War, there was a great deal of concern about the very long range of some Iraqi artillery systems. For example, the 155mm G5 towed howitzer had a range of 39,000 meters with base-bleed projectiles. The U.S. M109A3 self propelled howitzer had a range of 18,100 meters with normal ammunition. The Iraqis also had the Brazilian ASTROS SS-30 and ASTROS SS-60 multiple rocket launchers (MRL). These launchers had a maximum range of 30,000 and 60,000 meters, respectively, while the U.S. multiple-launch rocket system (MLRS) has a maximum range of 32,000 meters. What was not apparent was that the Iraqis did not appreciate the need for dedicated target acquisition units and had no capability to make use of this extended range. This failure to properly integrate these artillery systems into the army cost them dearly. Failure to appreciate the characteristics of new weapons and the need to have an appropriate doctrine is not a new problem.

Doctrine

During World War I, all sides initially failed to understand the lethality of the machinegun. They also failed to understand that the use of barbed wire and field fortifications made the then current tactical doctrine used in the attack totally inadequate. Millions were to pay the price of that lesson; i.e., that the development of new weapons can cause existing doctrine to become obsolete.

This lesson was not appreciated by the French, who failed to recognize that tanks committed in mass at critical points brought a revolution in mobility and firepower to the battlefield. In addition, virtually all tanks were equipped with radios, allowing the force to be maneuvered in combat. The French planned to fight the war at a much slower tempo and were demoralized when the Germans used armored formations to attack deep in the rear. It is not generally recognized that most French tanks were technically superior to the equivalent German tank, except for the communications capability.

Training

Unfortunately, the possession of a capability does not mean that it can be used effectively. In 1964, the Israelis committed several modern tanks in a border incident involving Jordan. The Israelis were unsuccessful at hitting the Jordanian tanks. This caused a major change in training methods, with a focus on teaching and using proper gunnery practices. In later wars, the Israelis demonstrated markedly better gunnery against opponents.

This lesson was available for all the world to see, but not all armies realized the importance of proper training to use new equipment. During the Falkland War in 1982, the British thought they had a marked advantage in night vision equipment, which they successfully used in battle. They were quite surprised to learn that the Argentines had deployed better night vision equipment to the Falklands. The British discovered this after the fighting, when they captured a warehouse in Port Stanley that held the night vision equipment. The Argentines did not know how to use this equipment and did not issue it to the front line troops.

Maintenance

Even if you know how to use the equipment, you must be able to keep it operational. The Red Army in 1941 had recently undergone purges that weakened the officer corps, and it was also plagued by poor maintenance at the start of the war. When the Germans attacked, over 75% of the Soviet tank fleet required major maintenance. This maintenance problem became so well known that it became a major factor in the design of Soviet tanks. Thus we can see that soft factors can have an important bearing on evaluating the relative performance of armies. This type of information has frequently been characterized in the past as too hard to do.

NGIC Rating Factors

Mindful of this mindset and the fact that pioneers frequently suffer for venturing into new territory, NGIC has developed a methodology for quantifying soft factors at the country level. We can no longer accept that some questions are too hard to answer. Commanders and their troops deserve to know how competent either allied or potential enemy forces are. NGIC has defined rating criteria for their purposes and believes that other groups can use these criteria. In these ratings we define 10 levels of performance. A world superpower generally rates 9 to 10, while a country with virtually no resources normally rates as a 1.

The rating factors used by NGIC are listed in table 1. Note that many factors include both hard and soft elements. Those that have both are subdivided into operational criteria and technical quality, or logistics and maintenance. We can provide the written rating criteria. Sample rating factors are given in appendix A.

1.

NGIC Rating Factors

Force Shaping Activities	Battlefield Operating Systems	Ability To Conduct Large Scale Operations	Force Evaluation
Training	Maneuver	Ability to Execute Combined Arms Operations	Battlefield Performance Projection
Leadership	Fire Support	Ability to Conduct Joint and Combined Activities	Capability To Conduct OOTW Operations
Ability to Assimilate New Materiel	Air Defense	Ability to Project Power	
Combat Experience	Mobility and Survivability	Size of Ground Forces	
Readiness	Combat Service Support		

Force Shaping Activities	Battlefield Operating Systems	Ability To Conduct Large Scale Operations	Force Evaluation
Morale And Cohesion	Command and Control		
	Intelligence		
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Remember that these ratings are defined levels of capabilities or level of performance. When we rate, we recognize that no rating system can exactly define every ground force in the world. We select the rating level that best defines the specific country for that factor. We use a numeric average to combine operational capabilities and technical quality or logistics and maintenance to produce a given level score. At least three people evaluate each country and assign a whole number for each factor. A Delphic-type scoring conference is then held, where the same three people compare their scores for each factor for the country. They must come to an agreement, but they may assign a score to the nearest tenth of a level. We have found these conferences to be effective and believe that they represent the best evaluation we can make. There is no weighting of factors. We considered score weighting and determined that the users of our evaluations were better suited to weight the scores as they need them. We normally display the factors in a single figure, looking at this figure as a total force evaluation or a force electro-cardiogram.

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1. Sample Overall Force Rating

We normally score for the current year and at 10-year intervals, so there are three ratings for each factor. We also indicate what we believe is the country's goal for each level of force effectiveness. A country may not choose to have a large mechanized force or to have a large force of mostly-self propelled howitzers. We separate the battlefield performance projection from the other factors because the battlefield performance projection is a separate evaluation by the analyst that takes all the factors into consideration to highlight that this force may be better or worse than the separate evaluations would indicate. The separate listing allows us to highlight what is currently regarded as a "force multiplier." Two new factors, Readiness and Moral and Cohesion, are being added to our list of factors. Readiness is split into two factors, Descriptive and Quantitative. Quantitative subfactors are summarized in table 2.

2.

Quantitative Readiness Factors

Interim Level	Personnel Strength (%)	Equipment (%)	Trained Personnel (%)	Readiness of Equipment (%)	Unit Days of Supply	Support Unit Days of Supply
10	95 to 100	95 to 100	86 to 100	95 to 100	5	More than 7
9	90 to 94	90 to 94	71 to 85	86 to 94	4 to 5	6 to 7
8	85 to 89	85 to 89	61 to 70	80 to 85	4	5 to 6
7	80 to 84	80 to 84	51 to 60	70 to 79	3 to 4	4 to 5
6	70 to 79	70 to 79	35 to 50	60 to 69	3	3 to 4
5	60 to 69	60 to 69	26 to 34	50 to 59	2 to 3	2 to 3
4	50 to 59	50 to 59	15 to 25	40 to 49	2	2
3	40 to 49	40 to 49	10 to 15	More than 30	1 to 2	More than 1
2	30 to 39	30 to 39	More than 5	Less than 30	1	1
1	Less than 30	Less than 30	Less than 5	Less than 25	Less than 1	Less than 1
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To use the table, one decides which level a country's personnel have attained and then enters the information in table 3. For example, say that personnel rates a 7, equipment an 8, trained personnel a 6, equipment readiness a 6, unit days of supply an 8, and support unit days of supply a 7. The scores are averaged and the final quantitative score is a 7.

3.

Sample Readiness Ratings

Averaged Level	Personnel (%)	Equipment (%)	Trained Personnel (%)	Readiness of Equipment (%)	Unit Days of Supply	Support Unit Days of Supply
7	7	8	6	6	8	7
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This quantitative score is then combined with the verbal description level to generate the total readiness score. When evaluating personnel strength, it can make a big difference whether you have a division short 10% of the personnel and moving up to combat, or a division that has been engaged in combat. In the latter case, more of the casualties will be taken by front line troops, given that there will be some casualties by artillery fire, aircraft, or other attacks on the rear area.

Comparison of NGIC Rating Factors and Previous MORS Soft Factors

We are not so arrogant as to suppose that we are the only organization that has examined the use of soft factors in modeling or simulation. We know better. We examined the published reports by the Soft Factors Working Group (WG 24) and compared them to our rating system. We then noted how many times a soft factor rating discussed by that group came close to matching one of the NGIC soft factors. The results are indicated in table 4. The first column lists the NGIC factors, and the second column the number of times we found the NGIC factor mentioned. The third column lists factors we do not discuss, with the number of times the factor is mentioned. Note that there is a morale and cohesion factor in the NGIC column. We discovered the high interest in this while preparing this presentation and then developed the factor as one to use in the future. Similarly, readiness was not originally one of our factors, but a previous presentation to another group indicated a near-unanimous need for that rating.

4.

Comparison of Factors

NGIC	Other Factors Agreement	Factors Not on NGIC List	Times Mentioned
Command and control	8	Man-machine systems/Human performance	2
Training	7	Surprise	1
Morale and cohesion	7	Time and space	1
Leadership	6	Chance	1
Combat experience	6	National differences in disease resistance	1
Ability to conduct joint or combined activities	6	Fear	1
Combat service support	5	Psychological stability of personnel	1
Maneuver	3	Motivation	1
Intelligence	3	Flight psychology	1
Readiness	3	Momentum	1
Mobility and survivability	3	Peculiarities of the organization of the sides	1
Battlefield performance projection	3	Applicability	1
Ability to assimilate new materiel	2	Personnel selection	1
Capability to conduct OOTW	2	National character	1
Fire support	0		
Air defense	0		

NGIC	Other Factors Agreement	Factors Not on NGIC List	Times Mentioned
Capability to conduct combine arms operations	0		
Ability to project power	0		
Size of ground forces	0		
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Examination of the table indicates that the modeling community is interested in most of the factors that we use. We have other customers who are interested in the ratings (as currently structured) that the modeling community has expressed little interest in applying to their models.

Methodological Constraints

There are many methodological constraints in applying the NGIC Rating Factors system to models. One is that the NGIC system describes the level of capability of the force and is not a linear system. Another is the selection of factors. Have we chosen the right factors to evaluate? Is there a need to combine factors? Which factors should be used to determine combat efficiency and breaking points? In several cases there may be double accounting of factors. This redundancy was accepted as a logical way to address issues. Is this view correct? The factors describe the country as a whole. Is there a need to rate each unit? Some rating factors inherently assume a mechanized force is the force of choice. Some countries may choose to focus on nonmechanized forces. These are questions that must be answered in the not-too-distant future.

Future Actions and Requirements

We need input from the user community to improve our products. We are not limited to supporting one organization. We plan to complete and publish a new rating guide in the near future. We have already created the readiness rating factor based on a consumer request. We want to ensure that our ratings are useful to a large group of consumers. We must ensure that our ratings are suitable for the consumer, and that our criteria are reasonably accurate and are clear to a wide variety of readers. If the ratings become too complex, no one can really trust them. We intend to maintain a customer focus, and we request comments from users. We want to know how well a country can use the equipment in the inventory and answer the warfighter's question, "How bad are those guys?"

Appendix A

Appendix A

Sample Ratings

Introduction

This appendix contains the ratings for readiness, morale and cohesion, joint and combined activities, and combined arms. The remainder of the ratings are available upon request.

Readiness

The purpose of the readiness rating is to define how ready the ground forces of a specific country are to engage in combat or their readiness level after engaging in combat. The rating factor has two parts, descriptive and quantitative. For the descriptive, select the level that best describes the country's ground forces. Next, go to the quantitative table and for each sublevel and each column in the table select a rating sublevel. Average all of the quantitative factors, then average the descriptive and final quantitative factor to produce the final readiness level. If any quantitative sublevel varies greatly from the preponderance of the other factors, describe the variation in the text of the report. Also include in the discussion on readiness that this factor does not cover the modernity of the equipment, or the ability to project power. Care should be exercised when comparing a country's readiness rating with that of another country. The readiness factor is not a comparison of combat power.

Descriptive

Level 10

- ✓Ground forces are deployed to wartime positions or staging areas.
- ✓Deployed units constitute complete combined arms forces.
- ✓Where required, liaison with joint or combined forces has been established.
- ✓Directives or contingency plans applicable to the unit have been issued and are fully understood at all levels.
- ✓Drills or rehearsals of likely operations have been conducted within the last 30 days.
- ✓Units are familiar with the terrain.
- ✓Transportation needs have been established, and required transportation for initial mission is available.
- ✓Required repair parts and support personnel are available at unit level to maintain operations for several days.
- ✓Mobilized soldiers are fully integrated into units and are virtually as capable as regular soldiers.
- ✓Mobilized units have been fully trained as units and are available for commitment.

✓All required command and control elements are in place and functioning.

Level 9

✓Ground forces are deployed to wartime positions or staging areas.

✓Deployed units constitute complete combined arms forces, less casualties.

✓Where required, liaison with joint or combined forces has been established.

✓Mission is understood at all levels.

✓Required repair parts and support personnel are generally available at unit level to maintain operations for several days.

✓During periods of non-front line service, units conduct training.

✓During periods of front line service, complex systems conduct in-place training.

✓Units are familiar with the terrain.

✓Mobilized units have been committed to combat, possibly with lower levels of personnel, equipment and readiness.

✓Transport units are generally available, but spot shortages may exist.

✓Most command and control elements are in place and functioning.

Level 8

✓Ground forces are deployed to wartime forward positions or staging areas.

✓Deployed units constitute complete combined arms forces.

✓Where required, liaison with joint or combined forces has been established.

✓Directives or contingency plans applicable to the unit have been issued and are fully understood at all levels.

✓Drills or rehearsals of likely operations have been conducted within the last 45 days.

✓Units are familiar with the terrain.

✓Transportation needs have been established and required transportation for initial mission is available.

✓Most required repair parts and support personnel are available at unit level to maintain operations for several days.

✓Mobilized soldiers are mostly integrated into units, and many are as capable as regular soldiers.

✓Mobilized units have been trained as units and are available for commitment in emergencies.

✓Most required command and control elements are in place and functional.

Level 7

✓Units are either deployed in forward area or are en route to staging areas.

✓Units constitute complete combined arms forces.

✓Where required, liaison with joint or combined forces has been established.

✓Units have been issued orders that are understood.

✍Units conduct individual and unit training when not committed to combat.

✍Transportation needs have been established, and required transportation for next mission is available.

✍Most required repair parts and support personnel are available at unit level to maintain operations for several days.

✍Mobilized soldiers are mostly integrated into units but are not as effective as regular soldiers.

✍Mobilized units have been trained as units and are available for commitment in emergencies.

✍Most required command and control elements are in place and functional.

Level 6

✍Ground forces are deployed to wartime positions or staging areas.

✍Deployed units constitute complete combined arms forces.

✍Where required, liaison with joint or combined forces has been established.

✍Directives or contingency plans applicable to the unit have been issued and are fully understood at all levels.

✍Drills or rehearsals of likely operations have been conducted within the last 45 days.

✍Units are familiar with the terrain.

✍Transportation needs have been established and required transportation for initial mission is available.

✍Most required repair parts and support personnel are available at unit level to maintain operations for several days.

✍Mobilized soldiers are integrated into units and some are as capable as regular soldiers.

✍Mobilized units have been trained as units and might be committed in emergencies.

✍Most required command and control elements are in place and functional.

Level 5

✍Ground forces are deployed to wartime positions or staging areas.

✍Units are conducting training at unit levels.

✍Supporting maintenance units are located near the units, some shortages of repair parts exist.

✍Transportation needs have been established, and most of the required transportation for next mission is available.

✍Mobilized soldiers reporting as replacements are not enthusiastic about being assigned to combat.

✍Headquarters are combat functional but do not have some critical equipment.

Level 4

- ✍ Ground forces are mainly deployed to staging areas.
- ✍ Units are not deployed as task-organized combined arms units.
- ✍ Headquarters are revising plans and units may have representatives participating in the planning.
- ✍ Units are conducting training in required mission areas.
- ✍ Units are aware of possible areas of commitment and are tailoring training for the expected conditions.
- ✍ Some critical repair parts are available, and maintenance support units can provide some assistance.
- ✍ Support units have begun limited support of combat units.
- ✍ Wartime procedures for supply issuance are being implemented.
- ✍ Mobilized soldiers are beginning to be integrated into units.
- ✍ Reserve units have been notified of call-up, but no facilities are available for mobilization.
- ✍ All command and control elements have moved to deployment sites, and have operational communications.

Level 3

- ✍ Ground forces have moved to local deployment area and are aware of potential commitment to combat.
- ✍ Upon deployment from garrison, training for possible missions starts.
- ✍ Units are not familiar with the terrain in potential areas of deployment.
- ✍ Available equipment is deployed with the unit, but somewhat more than 50% of the equipment is nonoperational.
- ✍ Unit has begun repair work on some nonoperational equipment and has requested required repair parts.
- ✍ Support units (including maintenance units) have begun to deploy to the general area but are preoccupied with own problems.
- ✍ Unit has begun to order required supplies
- ✍ Peacetime procedures are used to request supplies, and supporting units cannot fill all requisitions.
- ✍ Many mobilized soldiers have reported to units.
- ✍ Command and control elements are moving to deployment sites, and field communication have been established.

Level 2

- ✍ Ground forces are located in peacetime garrisons but have been alerted of possible hostilities.
- ✍ No training focused on specific combat missions has been conducted within the last year.

- ✍Units have no familiarity with the terrain in potential areas of deployment.
- ✍Peacetime procedures are used to request supplies, and requisitions are not routinely filled.
- ✍Repair parts are not available at unit level, and qualified maintenance personnel are not available.
- ✍Officers and NCOs are generally capable of maintaining internal order and discipline.
- ✍There are limited reserve forces available, mobilized, and reporting to units.
- ✍Command and control elements remain in peacetime sites but have alerted communications forces to deploy.

Level 1

- ✍Ground forces are located in peacetime garrisons, which are not suitable for defense, and have not been alerted to possible hostilities.
- ✍No training focused on specific combat missions has been conducted within the last year.
- ✍Units have no familiarity with the terrain in potential areas of deployment.
- ✍Unit has some supplies (less than one combat day), but not enough to execute assigned combat missions.
- ✍Peacetime procedures are used to request supplies, and requisitions are not filled.
- ✍Repair parts are not available at unit level, and qualified maintenance personnel are not available.
- ✍Officers and NCOs are generally capable of maintaining internal order and discipline.
- ✍There are no mobilized reserve forces available.
- ✍Peacetime command and control elements are located in peacetime sites and rely on commercial communications.

Quantitative

Quantitative readiness factors are summarized in table 5.

5.

Quantitative Readiness Factors

Interim Level	Personnel (%)	Equipment (%)	Trained Personnel (%)	Readiness of Equipment (%)	Unit Days of Supply	Support Unit Days of Supply
10	95 to 100	95 to 100	86 to 100	95 to 100	5	more than 7
9	90 to 94	90 to 94	71 to 85	86 to 94	4 to 5	6 to 7
8	85 to 89	84 to 89	61 to 70	80 to 85	4	5 to 6
7	76 to 85	76 to 84	51 to 60	70 to 79	3 to 4	4 to 5

[illegible]

To use the table, decide which level a country's personnel have attained, then enter the information in the table below. For example, personnel is a 7, equipment an 8, trained personnel a 6, equipment readiness a 6, unit days of supply an 8, support unit days of supply a 7, and morale a 7. The scores are averaged and averaged readiness level is a 7.

6.

Sample Readiness Ratings

Averaged Level	Personnel (%)	Equipment (%)	Trained Personnel (%)	Readiness of Equipment (%)	Unit Days of Supply	Support Unit Days of Supply
7	7	8	6	6	8	7
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This score is then combined with the verbal description level to generate the total readiness score.

Morale and Unit Cohesion

The morale and unit cohesion term of reference indicates the degree of pride and confidence soldiers feel toward their immediate superiors and compatriots, and what the state of morale is in units.

Level 10:

✍ Soldiers and officers serve together in a regimental or cohort system.

- ✍ All units have pride in accomplishments.
- ✍ Shared risk assumption between soldiers and their leaders.
- ✍ All units highly disciplined.
- ✍ Racial, class, ethnic, and religious tensions within units are almost nonexistent.
- ✍ High degree of loyalty between leaders and subordinates.
- ✍ High degree of loyalty among soldiers.
- ✍ Morale in units is very high.
- ✍ Nation/society exhibits very high degree of support for military.

Level 9:

- ✍ Same soldiers and officers serve together in same units.
- ✍ Majority of units have pride in accomplishments—90% +.
- ✍ Shared risk assumption between soldiers and their leaders.
- ✍ Majority of units highly disciplined—90% +.
- ✍ Racial, class, ethnic, and religious tensions within units almost nonexistent.
- ✍ Reasonable degree of loyalty between leaders and subordinates.
- ✍ High degree of loyalty among soldiers.
- ✍ Morale high in most units
- ✍ Nation/society exhibits moderately high degree of support for military

Level 8:

- ✍ Same soldiers and officers serve together in same units.
- ✍ Many units have pride in accomplishments.
- ✍ Shared risk assumption between soldiers and their leaders.
- ✍ Many units highly disciplined.
- ✍ Racial, class, ethnic, and religious tensions within units almost nonexistent.
- ✍ Reasonable degree of loyalty between leaders and subordinates.
- ✍ Reasonable degree of loyalty among soldiers.
- ✍ Morale fairly good in most units.
- ✍ Nation/society exhibits high degree of support for military.

Level 7:

- ✍ Same soldiers and officers usually serve together in same units.
- ✍ Many units have pride in accomplishments.
- ✍ Soldiers and their leaders sometimes share risk assumption.
- ✍ Units generally disciplined.
- ✍ Racial, class, ethnic, and religious tensions within units are minimal.
- ✍ Some degree of loyalty between leaders and subordinates.

- ✍ Reasonable degree of loyalty among soldiers.
- ✍ Morale good in elite units only; others fair.
- ✍ Nation/society mostly supports the military.

Level 6:

- ✍ Same soldiers and officers often serve together in same units.
- ✍ Some units have pride in accomplishments.
- ✍ Soldiers and their leaders sometimes share risk assumption.
- ✍ Units generally disciplined.
- ✍ Racial, class, ethnic, and religious tensions within units minimal.
- ✍ Some degree of loyalty between leaders and subordinates.
- ✍ Some degree of loyalty among soldiers.
- ✍ Morale fair in most units.
- ✍ Nation/society mostly support the military, some dissidents do not.

Level 5:

- ✍ Same soldiers and officers sometimes serve together in same units.
- ✍ Some units have pride in their accomplishments.
- ✍ Soldiers and their leaders sometimes share risk assumption.
- ✍ Units generally disciplined.
- ✍ Some racial, class, ethnic, and religious tensions within units.
- ✍ Little degree of loyalty between leaders and subordinates.
- ✍ Some degree of loyalty among soldiers.
- ✍ Morale low in some units.
- ✍ Nation or state generally supports the military, many dissidents do not.

Level 4:

- ✍ Same soldiers and officers sometimes serve together in same units.
- ✍ Few units have pride in their accomplishments.
- ✍ Soldiers and their leaders sometimes share risk assumption.
- ✍ Units generally disciplined.
- ✍ Some racial, class, ethnic, and religious tensions within units.
- ✍ Little degree of loyalty between leaders and subordinates.
- ✍ Little degree of loyalty among soldiers.
- ✍ Morale low in most units.
- ✍ Nation/society tends to support military, but large minority does not.

Level 3:

- ✍ Same soldiers and officers sometimes serve together in same units.
- ✍ Few units have pride in their accomplishments.
- ✍ Risk assumption between soldiers and their leaders unusual.

- ✍ Units frequently lack discipline.
- ✍ Some racial, class, ethnic, and religious tensions within units.
- ✍ Little to no loyalty between leaders and subordinates.
- ✍ Little loyalty among soldiers.
- ✍ Morale low in all units.
- ✍ Nation/society is divided over the military; large segments of society are split in their opinion.

Level 2:

- ✍ Same soldiers and officers seldom serve together in same units.
- ✍ Few units have pride in their accomplishments.
- ✍ Risk assumption between soldiers and their leaders is unusual.
- ✍ Units frequently lack discipline.
- ✍ Frequent racial, class, ethnic, and religious tensions within units.
- ✍ Little to no loyalty between leaders and subordinates.
- ✍ Little to no loyalty among soldiers.
- ✍ Morale low in most units; low desertion rate.
- ✍ Nation/society generally does not support military; some groups do.

Level 1:

- ✍ Soldiers and officers seldom serve together in same units.
- ✍ Virtually all units lack pride in their accomplishments.
- ✍ Risk assumption between soldiers and their leaders almost nonexistent.
- ✍ Absence of discipline.
- ✍ Frequent racial, class, ethnic, and religious tensions within units.
- ✍ Little or no loyalty between leaders and subordinates.
- ✍ Little or no loyalty among soldiers.
- ✍ Morale low in most units; high desertion rate.
- ✍ Nation/society has no respect for military.

Joint and Combined Operations

Joint operations describes the ability of the country to conduct joint operations with other services. Combined operations refer to operations with multinational organizations.

Level 10

- ✍ Country has extensive experience operating forces as joint components of a designated command or participating in combined operations in a coalition or alliance.
- ✍ Joint commands exist in peacetime, with commanders, staffs, and designated areas of interest.

✍ The requisite command links exist and are practiced. Airborne or seaborne command and control centers exist and integrate representatives from all the countries forces, either aboard the aircraft or through ground terminals.

✍ Standards exist for optimizing information or command distribution.

✍ To the maximum extent possible, forces use the same fuel and other consumables.

✍ Special organizations exist in the forces to increase liaison and information exchange, such as air observation units to support ground units and naval gunfire teams to advise ground forces on proper use of naval support.

✍ Logistics headquarters routinely exchange information relating to movement of troops and equipment.

✍ Several small joint exercises occur each year, with larger ones every 12-18 months.

Level 9

✍ Country has established joint commands, with commanders, staffs, and designated areas of interest or is a member of a coalition or alliance and occasionally participates in combined operations of some type.

✍ Joint exercises are scheduled each year.

✍ While the requisite command links exist in peacetime, there are difficulties in communicating with some elements of the joint command.

✍ Airborne command and control centers exist, but coordination with other services does not always run smoothly.

✍ Data links sometimes experience compatibility problems.

✍ The need for standards to facilitate information sharing is acknowledged, but the working groups have difficulty in producing the standards.

✍ While most fuel and other consumables can be exchanged between services, there are some shortcomings in this area.

✍ Ad hoc organizations are formed to increase liaison and information exchanges.

✍ Logistics headquarters exist and frequently attempt to exchange information relating to movement of troops and equipment.

✍ Communications problems hinder such exchanges.

Level 8

✍ Country has wartime plans to establish joint commands.

✍ Country has participated in international peacekeeping or peacemaking operations.

✍ Commanders and staffs are drawn from other jobs.

✍ Joint exercises are held every year but do not always receive a high level of interest in the separate services.

✍ Shortcomings reported in the exercises are normally not corrected.

- ✍ Major communications facilities are established on an ad hoc basis.
- ✍ As a consequence, communications with all elements of the joint command are sometimes not reliable.
- ✍ No dedicated airborne command and control facilities exist, but are established on an as needed basis.
- ✍ After actions reports invariably recommend that standards be established for exchanges of information, but are rarely followed up.
- ✍ Some fuel and other consumables can be exchanged between services, but the extent is unknown, and no effort is expended to change existing practices.
- ✍ The need is recognized to field liaison organizations, but funding cannot be obtained or other problems prevent them from being formed.
- ✍ Logistics headquarters are oriented to single service support and are reluctant to provide support across service boundaries.

Level 7

- ✍ Country has recognized that coordination of activities to reduce interface problems is not adequate.
- ✍ Experimental exercises with a joint commander have been held.
- ✍ The commander did not have any special staff or communications capability.
- ✍ Guidance for the exercise was from the national headquarters, but with joint commander controlling operations.
- ✍ Joint exercises are held every year to 18 months, with units as large as a corps headquarters participating.

Level 6

- ✍ Country has teams at army, corps, division, and brigade level to coordinate delivery of ordnance and air space use.
- ✍ Guidance for exercises are from national headquarters to component commanders, bypassing designated joint commander.
- ✍ Participation in peacekeeping or peacemaking operations has not been satisfactory.
- ✍ The air force and/or navy provides personnel and equipment at the higher levels to conduct coordination.
- ✍ Most of the aircraft have radios that can be used to communicate to selected ground units.
- ✍ Naval units have organic gunfire control organizations, and can communicate with ground and air units on common frequencies.
- ✍ Most aircraft are fitted to deliver all non guided ordnance from any service's ordnance holdings.
- ✍ Joint exercises are held every year to 18 months, with units as large as a division participating.

Level 5

- ✍ Country has established division or brigade air support teams to coordinate delivery of aerial ordnance.
- ✍ Country has routine exchange agreements to have officers in other countries to examine joint and combined operations.
- ✍ No designated joint commander.
- ✍ The army normally provides the vehicles and equipment and some equipment operators, while the air force mans air particular communications equipment and directs air strikes.
- ✍ Most of the air force communications equipment does not operate on common frequency with ground force units.
- ✍ Naval units may establish ad hoc gunfire control organizations but must bring their own communications equipment.
- ✍ Air force and naval aerially delivered munitions are frequently incompatible and cannot be delivered by aircraft from the other service.
- ✍ Joint exercises are held every 12-18 months, with units as large as brigades participating.

Level 4

- ✍ Country routinely exchanges officers at company and field grade levels with other services to facilitate liaison in major headquarters.
- ✍ Officers are occasionally exchanged with other countries to examine how joint or combined operations are conducted.
- ✍ When joint training or exercises are planned, these officers serve as conduits for information dissemination.
- ✍ Communications equipment between services often not compatible.
- ✍ Joint exercises occur every 1 to 2 years and involve deployment of forces between battalion and brigade level, along with comparable air force and naval units.
- ✍ Logistic organizations routinely prepare to provide support, within recognized limitations.

Level 3

- ✍ Country has developed doctrine for joint forces and teaches it in service schools for field and company grade officers.
- ✍ Joint exercises are scheduled every 2-4 years, but mostly involve command post exercises.
- ✍ Most coordination is handled at the division or corps headquarters level, as well as air wing and comparable naval units.
- ✍ Communications equipment between services usually not compatible.
- ✍ Normally, only company sized forces are involved in actual joint tactical training.

✍ All three services recognize there will be logistical problems involved in long term or far reaching operations and have begun tentative contacts to attempt to resolve the problem.

Level 2

✍ Country attempts to address joint operations by convening conferences at the ground/air/naval force headquarters level and forming special committees to address joint doctrine and write manuals for joint operations.

✍ Country has little experience in coordinating operations with a coalition or alliance.

✍ Blocks of instruction are used at senior service schools to educate field grade officers in joint operations.

✍ At intervals of 5 to 10 years, joint operations involving air, ground, and naval forces are scheduled.

✍ These operations tend to be set piece operations or demonstrations rather than free play or directed exercises.

✍ Virtually no attention is paid to the details of logistic support.

Level 1

✍ Country has little experience in coordinating the operations of different services or of operating in a coalition or alliance

✍ While an air force may exist, and practice support of ground forces, the country does not routinely assign air force personnel to man teams in any tactical units to coordinate airstrikes.

✍ Airstrikes are coordinated through normal command channels.

✍ Little or no contact is maintained with the navy to facilitate naval support of ground forces.

✍ In turn, the army is reluctant to provide protection to naval or air facilities, and does not seek to improve inter service coordination.

Combined Arms Operations

Combined operations include the capability of an armed force to conduct operations integrating and synchronizing combat power of the battlefield operating systems (BOS): maneuver, fire support, air defense, command and control, intelligence, mobility and survivability and combat service support. Combined arms consists of two or more weapons systems or units of different characteristics or capabilities in mutual support to produce complementary and reinforcing effects that neither can obtain separately.

Level 10:

✍ Operational concepts and doctrine established for integrating and synchronizing combined combat power of infantry, armor, artillery, air defense, tactical missile, army aviation, engineer, special operations, transport, electronic warfare, and/or intelligence assets. Consideration of chemical operations is integrated into all doctrine.

✍ Combined arms training center established for commanders, staffs, and maneuver units to conduct combined arms operations. The center has dedicated automated support and a full-time enemy force. For

organizations larger than those that can be exercised in the center, netted command post exercises can be conducted, with realistic simulations in real time.

- ✍ Capable of coordinating multi-army group operations in a theater or coordinating operations in multiple theaters.

- ✍ Special headquarters detachments or officers may be assigned to lower units to expedite the major senior commanders knowledge of the situation.

Level 9:

- ✍ Doctrine calls for the integration of armor, infantry, artillery, army aviation, engineers, air defense, electronic warfare, and intelligence units. Where offensive short-range missiles (SRBM) are available, they are integrated into the doctrine.

- ✍ Capable of employing airborne and/or airmobile divisions in concert with operations.

- ✍ Combined arms training center established for commanders, staffs, and maneuver units to conduct combined arms operations.

- ✍ This center does not have extensive automation nor a dedicated enemy using different tactics.

- ✍ Capable of forming major headquarters at field army or army group level, when required. May control operations of allied forces.

- ✍ Conducts multicorps exercises at least once every 2 years.

Level 8:

- ✍ Doctrine calls for the integration of armor, infantry, artillery, army aviation, engineers, air defense, electronic warfare, and intelligence units. Where offensive short-range missiles (SRBM) are available, they are integrated into the doctrine. Use of nuclear weapons will be integrated into doctrine at this level.

- ✍ Units are capable of communicating and coordinating operations with supporting joint forces.

- ✍ Capable of employing multiple brigade/regiments airborne and/or airmobile operations with infantry and armor linkup.

- ✍ Can conduct amphibious operations, if required.

- ✍ Advanced combined arms training established for officers, as well as staffs.

- ✍ Conducts combined arms operations at the corps/army (where there is no intermediate headquarters between division and army) level. Multiple division level exercises are conducted annually.

- ✍ Functional logistics units are formed at division and corps levels.

Level 7:

- ✍ Doctrine calls for the integration of armor, infantry, artillery, army aviation, engineers, air defense, and intelligence units. Offensive (SRBM) missiles may be integrated into the doctrine. Offensive chemical operations are also integrated. Use of nuclear weapons may be integrated into doctrine at this level.

✍ Capable of conducted division-level combined arms operations, and conduct a minimum of two division-level exercises annually.

✍ Capable of employing airborne/air assault operations of brigade/regimental size, with the requisite artillery support. Practice linking with infantry and armor units. May be capable of conducting amphibious operations.

✍ Liaison officer positions established to synchronize and integrate combat power of maneuver units.

✍ At division level, a major logistics command is formed.

Level 6:

✍ Doctrine calls for the integration of armor, infantry, artillery, engineers, air defense, special operations forces, and intelligence units. Offensive chemical operations may be integrated into doctrine, along with defense NBC operations.

✍ Combined arms forces are tasked organized into task forces to support specific operational requirements.

✍ Branch schools have blocks of instruction on other branches and teach combined arms operations

✍ Ground forces has combined arms brigades or regiments, with several armor battalions available.

✍ Annual training up to brigade/regimental level emphasizes true combined arms operations.

✍ Liaison officers employed to integrate combat power of the combined arms forces.

Level 5:

✍ Doctrine calls for the integration of armor, infantry, artillery, engineers, air defense, and intelligence units.

✍ Conducts combined arms operations up to the brigade/regimental level, at least annually. These operations are not fully effective in integrating the combat arms. Each branch tends to focus on their area.

✍ Country has armor units of battalion size.

✍ Mechanized infantry and self-propelled artillery units have equipment with capabilities generally equal to those of tanks.

✍ Professional combined arms schools for officers and solders established.

✍ Liaison officers employed to integrate combat power of the combined arms forces.

✍ Separate signal units exist to provide long-haul commutations.

✍ Support branches form mobile units for logistical support.

Level 4:

✍ Doctrine calls for the integration of armor, infantry, artillery, engineers, and intelligence units.

✍ Combined arms schooling limited to support infantry and artillery forces.

✍ Conducts combined arms exercises or operations up to battalion level

at least annually.

- ✍ Country has organic engineer and dedicated intelligence units.
- ✍ Units deployed in the field have problems with logistical support.
- ✍ Liaison officers employed to integrate combat power of the combined arms forces.
- ✍ Equipment in units is not matched to capabilities of the most effective units.
- ✍ Branch schools have blocks of instruction on other branch and teach rudimentary combined arms operations.

Level 3:

- ✍ Limited doctrine to integrate infantry and artillery.
- ✍ Employs infantry, limited tanks, mortar and artillery support in combined arms operations up to company level. If available, tanks are only used in direct support of dismounted infantry.
- ✍ No mechanized infantry, may have motorized infantry.
- ✍ May conduct riverine operations.
- ✍ Exercises integrate at least infantry, mortar, and artillery units.
- ✍ Conducts combined arms operations up to company level.

Level 2:

- ✍ No established doctrine for combined arms operations.
- ✍ Capable of employing only infantry and mortar fire support in combined arms.
- ✍ Any existing armored units are primarily used for security of the national leadership, in the national capital.
- ✍ Unable to conduct combined arms operations in other than day operations with possible exception of mortar support for the maneuver forces.
- ✍ Lack of experience by unit leaders in coordinating infantry and mortar operations.

Level 1:

- ✍ Paramilitary force operations.
- ✍ Doctrine oriented toward small unit infantry/paramilitary operations. No doctrine exists for combined arms operations.
- ✍ Infantry force incapable of combining arms or any two separate arms.

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